

Remarks

As an initial matter, Applicant appreciates the courtesies extended by Examiner Hajnik to Applicant's representative, Christopher Menke, during telephone and email communications on July 26, 2006. These amendments and remarks presented herein reflect those discussed during the interview, and Applicant respectfully submits that this Amendment satisfies the requirements of MPEP §713.04.

Claims 1-17 remain in this application and are presented for the Examiner's review and consideration. Claims 1, 8, 10, 13, 15, and 17 have been amended. Applicant believes the amendments and remarks herein serve to clarify the present invention and are independent of patentability. No new matter has been added.

35 U.S.C. §103 Rejection

Claims 1-17 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 2002/0028006 to Novak *et al.* ("Novak") in view of "Volume Rendering Based Interactive Navigation within the Human Colon" by Wan *et al.* ("Wan"). In response, Applicant respectfully submits that this rejection should be withdrawn.

Novek discloses a computer-assisted diagnosis method for assisting diagnosis of anatomical structures in a digital volumetric medical image of at least one lung. (abstract). Axial slices are presented to the user in the axial image window 515. The user may scroll back and forth through the axial slices by sliding the slice slider 540. A volume of interest may be selected by moving the positioning device, such as a mouse or a joystick to navigate in the 3-D volumetric image data to a particular point in the current slice, or by invoking the "Candidate Tour". Once a volume of interest has been selected, the user may use several visualization tools to make a decision about whether or not the volume of interest is a nodule. (¶[0040]).

Wan teaches:

"In our fast volume rendering method, we are more interested in $D_s(X)$, the distance from each voxel X to the nearest colonic surface. For each voxel inside the colon, this distance is calculated as an Euclidean distance map [16]. For the remaining voxels beyond or on the colon

wall, the distance value is set to 0. The basic idea of our rendering method is described as follows.

"The human colon has a cavity structure with a bounding surface, and during navigation the camera is always located inside the empty colonic interior. Therefore, if we can skip over the empty space and only perform sampling in the neighborhood of the colon surface, much ray casting time can be saved. Based on such an observation, we propose a fast ray casting method by exploiting the distance information from each voxel inside the colon to the closest colon wall. Specifically, when we start ray traversal from the viewpoint, instead of performing regular sampling in the short equal-distance intervals, we first check the distance from the current sampling point to the nearest colon wall. If the distance is greater than the regular sampling interval, we directly jump to a new sampling point along the ray with this distance. Otherwise, it indicates that we are already very close to the colon wall and regular sampling is performed." (p. 398, right column, text lines 17-38).

Applicant discloses and claims, *inter alia*, providing of volumetric data, the volumetric data having first voxels belonging to a reference surface, the reference surface being a surface of a body structure; entering a user selected distance by means of user interface means comprising a wheel mouse, an amount of rotation of the wheel of the wheel mouse being indicative of the user selected distance, the user selected distance measured from the surface of the body structure; determining of second voxels of the volumetric data spaced the user selected distance from the reference surface, the second voxels belonging to the body structure; and visualizing of the second voxels.

As such, Applicant claims visualizing voxels of a body structure which are spaced a distance from a surface of the body structure. The distance is measured from the surface of the body structure into the body structure.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Applicant contends that not all the elements of amended independent claims 1, 8, and 10 are taught or suggested by Novak in view of Wan.

For example, amended claims 1, 8, and 10 require the reference surface to be a surface of

a body structure. As stated in the Office Action, Novak fails to teach this element. Wan also fails to teach a reference surface being the surface of a body structure. Rather, as previously described, Wan's reference points are voxels inside the colon. Wan's target point for visualization is the colon wall, but the reference point is in the cavity of the colon, not on the surface.

Also, claims 1, 8, and 10 require entering a user selected distance which is measured from the surface of the body structure. In contrast, Novak teaches scrolling back and forth through axial slices. Wan's measured distance is from voxels in the colon cavity to the colon wall. Both Novak and Wan fail to disclose a distance measured from a surface of a body structure.

Furthermore, claims 1, 8, and 10 require the second voxels to be spaced the user selected distance from the surface of the body structure wherein the second voxels belong to the body structure. Novel teaches a "second" axial slice spaced a distance from a "first" axial slice, but fails to disclose that the distance is measured from a surface of a body structure and fails to disclose that the "second" axial slice is of the body structure. Wan teaches that the "second" voxels or colon wall is spaced a distance from voxels in the colon cavity, but fails to disclose that the distance is measured from a surface of a body structure and fails to disclose that the "second" voxels belong to the body structure while the "first" voxels are a surface of the body structure. In fact, Wan discloses that "[f]or the remaining voxels beyond or on the colon wall, the distance is set to 0." As such, Wan explicitly teaches away from measuring a distance from a surface of a body structure.

Accordingly, Applicant respectfully submits that amended, independent claims 1, 8, and 10 are patentable over Novak and Wan, alone or in combination. Based on at least their dependencies, Applicant submits that claims 2-7, 9, and 11-17 are patentable as well.

Applicant(s): V. Dicken.
Application No.: 10/781,354
Examiner: D. Hajnik

Conclusion

In light of the foregoing, this application is now in condition for allowance and early passage of this case to issue is respectfully requested. If any questions remain regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

A fee of \$395 is believed to be due for a request for continued examination. The fee is being paid via EFS-Web. Please charge any additional fees (or credit any overpayments of fees) to the Deposit Account of the undersigned, Account No. 500601 (Docket No. 7390-X04-030).

Respectfully submitted,



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